


M e m o r a n d u m

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To: BDAC Members

From: Lester A. Snow, Executive Director
CALFED Bay-Delta Program



Subject: Economic Evaluation of Water Management Alternatives

An approach to conducting an **Economic Evaluation of Water Management Alternatives** has been developed and reviewed with stakeholder representatives. The study will consist of two major steps: scenario development and impact analysis.

Scenario Development: The scenario development methodology consists of linking water supply options via conveyance options with demand locations subject to various policy assumptions and preferences. Water supply options include supply increase and demand reduction opportunities. These options are being characterized by cost and quantity of water supply (long-term average and drought period). Conveyance options are being characterized by cost and capacity. Any increase in water supply resulting from implementing a conveyance option also will be estimated. Water supply demands are being characterized by amount and location and are a function of the cost of available supply. Both long-term average and drought period demand patterns are being developed.

Stakeholders are being asked to provide input on policy assumptions and preferences to guide scenario development. Examples of possible policy assumptions and preferences include limitations on land fallowing or facility development, allocation of costs, amounts of water supply from conservation, and costs of mitigation. Various policy assumptions and preferences will be grouped into sets that represent stakeholder views. A preliminary draft summary of stakeholder policy assumptions and preferences is displayed in the attached table. This information was gathered through a series of stakeholder meetings and a review of stakeholder correspondence and reports. During the next several months, these policy assumptions will be refined as a result of additional discussions with stakeholders.

CALFED Agencies

California The Resources Agency
 Department of Fish and Game
 Department of Water Resources
 California Environmental Protection Agency
 State Water Resources Control Board

Federal Environmental Protection Agency
 Department of the Interior
 Fish and Wildlife Service
 Bureau of Reclamation
 U.S. Army Corps of Engineers

Department of Agriculture
Natural Resources Conservation Service
Department of Commerce
National Marine Fisheries Service

The next phase of the study, scheduled to proceed through June 1999, will involve linking the water supply options, conveyance options, demand locations, and policy assumptions and preferences. A range of scenarios will be formulated, designed to represent a variety of combinations of the supply, demand management, and conveyance options most likely to be cost-effective -- subject to the constraints imposed by the policy assumption and preference sets. The result will be three to five water management scenarios which reflect, to the extent possible, the full range of stakeholder viewpoints.

Impact Analysis: To evaluate the relative hydrologic, environmental, and socio-economic consequences of various water management scenarios and to help judge their practicability, an impact analysis tool is being developed. The first step in developing this tool is to formulate the necessary assumptions and methods to construct a modeling framework. This framework will integrate socio-economic, environmental, water quality, power production, and hydrologic models and be designed to capture the important -- and sometimes critical -- hydrologic, environmental, and socio-economic interdependencies and constraints which characterize water management in California.

A key effort in this task is developing a method to link the Department of Water Resources' project operations model (DWRSIM) with the Central Valley Ground and Surface Water Model (CVGSM). This linkage will allow the consequences of changes in CVP and SWP deliveries on groundwater to be evaluated and the effect on upstream depletions due to changes in agricultural water use to be adequately captured for realistic DWRSIM runs.

Another key element is developing a method for linking the DWR urban water service reliability benefit model (LCPSIM) to the Central Valley Production and Transfer Model (CVPTM) developed by the USBR and DWR such that agricultural production, agricultural water use by source, and water marketing within the agricultural sector and between the agricultural sector and the urban sector can be realistically modeled. This will facilitate estimating economic impacts as well as impacts on groundwater levels due to water marketing and changes in agricultural water use in the Central Valley.

The IMPLAN (Impact Analysis for Planning) input-output model developed by the US Forest Service and now maintained and sold by MIG, Inc., will be used to turn the direct economic impacts on Central Valley agriculture estimated with the LCPSIM/CVPTM analysis tool described above into impacts on regional employment and income and facilitate the estimation of third-party impacts of concern to local communities.

To allow the evaluation of adverse or beneficial environmental effects, output from the hydrologic models must be analyzed to identify potential changes to habitat value or

threatened and endangered species survival due to changes in streamflows and groundwater levels associated with specific water management options. The analysis of other important impacts will be facilitated by integrating power production models and urban water quality models into the comprehensive modeling framework.

Development of the impact evaluation tool is scheduled to proceed through June 1999. Once the tool is available, an additional six months will be required to complete the evaluation of three to five water management scenarios.